SIEMENS

POLYTRON T.O.P. VF01x (Phase 3.06)

[redacted] AX

DICOM Conformance Statement

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1. Introduction

1.1 Overview

The Conformance Statement describes the DICOM interface for the Siemens POLYTRON T.O.P. VF01x in terms of part 2 of [DICOM].

This introduction describes the application's implemented DICOM functionality in general terms.

1.2 Scope and Field

The Siemens product POLYTRON T.O.P VF01x is a Multipurpose System for digital Angiography and Interventional Procedures. The POLYTRON T.O.P. is designed to be integrated into an environment of medical DICOM-based devices. POLYTRON T.O.P. supports the storage of images utilizing the DICOM "Secondary Capture IOD". Additionally, POLYTRON T.O.P. is able to retrieve a Worklist from an Information System utilizing the DICOM "Basic Worklist Management Service Class".

1.3 Audience

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

1.4 Remarks

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality as SCU and SCP, respectively.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Siemens and other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM 3.0 Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

1. The comparison of different conformance statements is the first step towards assessing interconnectivity between Siemens and non-Siemens equipment.

2. Test procedures should be defined and tests should be performed by the user to validate the connectivity desired. DICOM itself and the conformance parts do not specify this.

3. The standard will evolve to meet the users' future requirements. Siemens is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

1.5 Definitions, Terms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard.

Additional Abbreviations are as follows:

SUN OS	UNIX operating system from SUN Microsystems, Inc., Palo Alto, USA
CSE	Customer Support Engineer
SIT	Siemens Installation Tool
UI	User Interface

1.6 References

[DICOM] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.14, 1998

2 Image Storage

2.1 Implementation Model

The Siemens POLYTRON T.O.P. DICOM Application Entity originates associations for Storage of DICOM Composite Information Objects in Remote Application Entities.

2.1.1 Application Data Flow Diagram

The POLYTRON T.O.P. DICOM network implementation is a UNIX application and acts as SCU for the C-STORE DICOM network service.

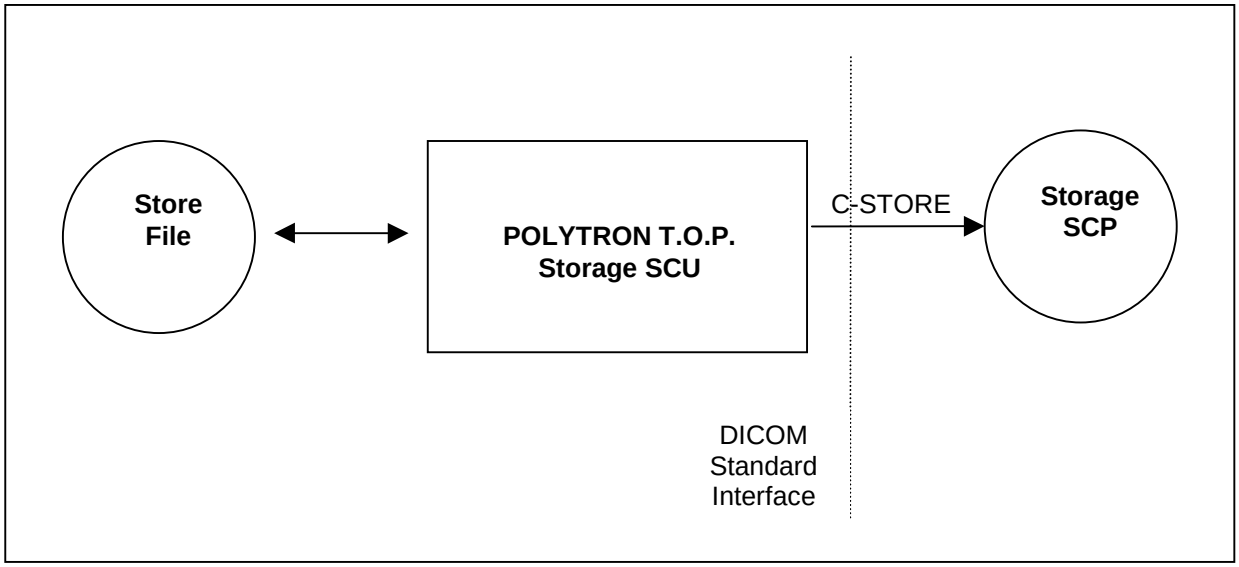

Figure 1: POLYTRON T.O.P. DICOM Storage Implementation Model

2.1.2 Functional Definition "Image Send"

The POLYTRON T.O.P. DICOM Application Entity acts as a Service Class User (SCU) for the

- Storage Service Class (to store “Photofile Images” in a remote DICOM Node)

Upon selection of a Study all marked "Photofile Images" can be send to a remote DICOM node. One association is opened for each send request. Each Image will be build to a DICOM standard extended SC IOD and send over the opened association.

The remote destination has to be defined during configuration procedure with the POLYTRON T.O.P. Service UI.

If POLYTRON T.O.P. receives any other SCP response status than “Success” or “Warning”, a notification to check for network problems will appear on the user interface. The detailed status is kept in the internal service log and can be displayed vi the Service UI. A response status of "Refused: Out of resources" will cause the POLYTRON T.O.P. to show a dedicated error message.

During transmission of images a related job entry is visible in the POLYTRON T.O.P. Job-Queue. The selected destination is displayed in Yellow color to indicate "Busy" condition. Any Failure will change this indicator to Red color. After successful completion the display will revert to standard color.

If the SCP aborts the transfer, the job remains active in the POLYTRON T.O.P. and a retry is performed every 10 minutes. Removing the job from the queue with Job-Queue control interface can terminate this.

At any time the active transfer can be aborted via the Job-Queue control interface. The POLYTRON T.O.P. will stop transmission with the delay until the currently active image transfer (one image max.) is finished. It is up to user to apply corrective action at the destination before repeating any aborted transfer.

2.1.3 Sequencing of Real-World Activities

Not applicable

2.2 AE Specification

The POLYTRON T.O.P. service class user application provides one AE being used when initiating associations to remote DICOM nodes

The POLYTRON T.O.P. DICOM Application Entity provides Standard Conformance to the following DICOM SOP Class as a SCU:

SOP Class Name	SOP Class UID
SC Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7

2.2.1 Association Establishment Policies

2.2.1.1 General

Application Context Name (ACN)	1.2.840.10008.3.1.1.1
Maximum PDU Length	16 kB

The configuration of the POLYTRON T.O.P. DICOM application defines the Application Entity Titles, the port numbers and of course the host name and net address.

2.2.1.2 Number of Associations

POLYTRON T.O.P. DICOM application initiates one association at a time, one for each transfer request being processed.

2.2.1.3 Asynchronous Nature

Asynchronous communication, i.e. multiple outstanding transactions over a single association, is not supported.

2.2.1.4 Implementation Identifying Information

Implementation Class UID	“1.3.12.2.1107.9”
Implementation Version Name	“Siemens_DICOM_10"

2.2.2 Association Initiation by Real-World Activity

POLYTRON T.O.P. DICOM application will attempt to initiate a new association for:

- DICOM Image Send (C-STORE)

2.2.2.1 Associated Real-World Activity – Store File

Store File will create a new job queue entry. An internal task will process the job queue and activate the related DICOM service. If the process successfully establishes an association to a remote Application Entity, it will transfer each image within this job one after another via the open association. If the C-STORE Response from the remote Application contains a status other than Success (or Warning) the association is aborted within the time needed to finish the transfer of the current image. This is due to the fact that evaluation of a finished transfer occurs while another image transfer is already active.

The DICOM target nodes will be configured by a CSE with the SIT service tool.

2.2.2.2 Proposed Presentation Context (Presentation Context Table)

The POLYTRON T.O.P. DICOM application will propose the following presentation contexts:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
SC Image Storage Service Class	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.2.3 SOP specific Conformance Statement

The DICOM images created by the DICOM interface of the POLYTRON T.O.P. conform to the DICOM SC IOD (Standard extended IOD). The objects contain additional elements, so-called "retired" elements from earlier versions of the standard, DICOM elements from several XA modules and private elements with Siemens-specific XA-relevant information. Please refer to Annex A for a complete listing of all supported Standard DICOM elements.

The receiving DICOM nodes are responsible for data consistency when modifying images. All unknown private data elements have to be removed upon modification.

The POLYTRON T.O.P. implements all modules (mandatory and user optional) defined in the SC IOD module table of the DICOM Standard (Table A.8-1 Part 3 of [DICOM]). Within the modules all type 1 and type 2 attributes are supported.

Please refer to Annex A for all supported Standard DICOM elements.

2.2.3 Association Acceptance Policy

Not applicable

2.3 Communication Profiles

2.3.1 Supported Communication Stacks (part 8)

The DICOM Interface of the POLYTRON T.O.P. provides DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

2.3.2 TCP/IP Stack

The DICOM Interface of the POLYTRON T.O.P. uses the TCP/IP stack from the SUN-OS system upon which it executes. It uses a subroutine library, based on a Berkeley socket interface.

2.3.3 Physical Media Support

The DICOM Interface of the POLYTRON T.O.P. is indifferent to the physical medium over which TCP/IP executes. It inherits this from the SUN-OS UNIX System upon which it executes.

2.4 Extensions/Specializations/Privatizations

2.4.1 Standard Extended Secondary Capture Image Storage

The POLYTRON T.O.P. DICOM application implements a Standard extended Secondary Capture (SC) IOD. Additionally, the POLYTRON T.O.P. implements private data elements. Many of these contain XA-related information. Annex A shows all Standard DICOM attributes supported for the Standard Extended Secondary Capture Image Storage data set.

2.4.2 Private Transfer Syntaxes

None

2.5 Configuration

2.5.1 AE Title/Presentation Address Mapping

The Siemens POLYTRON T.O.P. DICOM unique Application Entity Titles are assigned using the following mechanism:
Each Application Entity Title starts with a unique string of 10 characters assigned for this Siemens POLYTRON T.O.P. DICOM node. This string is also used as the first 10 characters of the PACSnet Logical Address (PLA) and builds the AEroot. An example for such a string is '049SA1DS39'.
The DICOM Sender Application provides the Application Entity Title:

<AEroot>DRSP

The Application Entity Title, Host name and Port number are defined via the SIT service tool. The SIT service tool is intended to be used by a CSE only. Setting of one Default Gateway is possible too.

2.5.2 Configurable Parameters

The Application Entity Titles, Host names and Port numbers are configured using the SIT.

Other default values used are described in 2.5.2.2 and 2.5.2.3.

2.5.2.1 Number of Simultaneous Associations

POLYTRON T.O.P. supports for one service only one association at a time.

2.5.2.2 Maximum PDU Size

- max PDU size: 16 kB

2.5.2.3 Time Out

- time-out until a SCP has to accept/reject an association request: 240 sec
- time-out for accepting a message over network: 240 sec

2.6 Support of Extended Character Sets

ISO-IR 100 (ISO 8859-1:1987 Latin Alphabet N 1. supplementary set)

3 Worklist Management

3.1 Implementation Model

3.1.1 Application Data Flow Diagram

Worklist Update is performed as a result of an operator request, or automatically at certain time intervals. Each request results in an initiation for an association. Under normal conditions the association will be closed after receiving a "Success" response from the Information System.

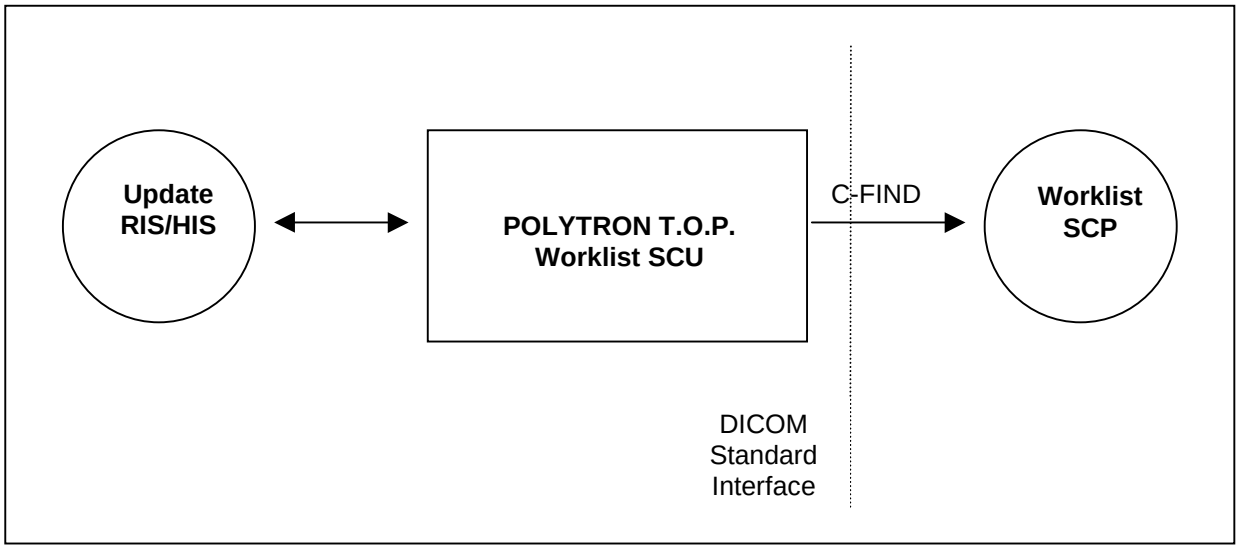

Figure 2: POLYTRON T.O.P. DICOM Worklist Implementation Model

3.1.2 Functional Definition "Update RIS/HIS"

The POLYTRON T.O.P. DICOM Application Entity acts as a Service Class User (SCU) for the

- Basic Worklist Management Service Class (to request a Worklist from a RIS)

The request for a Worklist Update is initiated by user interaction (“Update RIS/HIS” button), and automatically at regular 10 minute time interval.

Upon initiation of the request, the POLYTRON T.O.P. will build an Identifier for the C-FIND request, will initiate an association to send the request and will wait for Worklist responses. Retrieved responses will be inserted into a "Schedule Database" for later usage during Patient registration. The POLYTRON T.O.P. will not handle more than 255 entries in the schedule database. Only worklist response identifiers with a "Specific Character Set" of "ISO_IR 100" or the attribute being absent will be accepted. In any other case the response identifier is discarded and the service log will indicate this event.

POLYTRON T.O.P. always requests all items for a specific day (actual date) and, depending on configuration, the individual system’s AET or specific Modality code (XA).

If any other SCP response status than "Success" or "Pending" is received by POLYTRON T.O.P., a notification about communication problems to RIS/HIS will appear on the user interface.

The POLYTRON T.O.P. Worklist Request Identifier is described in Annex B “Siemens Worklist Request Identifier Description”.

3.1.3 Sequencing of Real-World Activities

Not applicable

3.2 AE Specification

The POLYTRON T.O.P. Application Entity provides Standard Conformance to the following DICOM SOP Class as a SCU:

SOP Class Name	SOP Class UID
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31

3.2.1 Association Establishment Policies

3.2.1.1 General

Application Context Name (ACN)	1.2.840.10008.3.1.1.1
Maximum PDU Length	16 kB

The configuration of the POLYTRON T.O.P. DICOM application defines the Application Entity Titles, the port numbers and of course the host name and net address.

3.2.1.2 Number of Associations

POLYTRON T.O.P. will attempt to initiate one association for a Worklist Update request.

3.2.1.3 Asynchronous Nature

Asynchronous communication, i.e. multiple outstanding transactions over a single association, is not supported.

3.2.1.4 Implementation Identifying Information

Implementation Class UID	“2.16.840.1.113669.2.931128”
Implementation Version Name	“Siemens_DICOM_10"

3.2.2 Association Initiation by Real-World Activity

POLYTRON T.O.P. will attempt to initiate a new association for:

- DICOM Worklist Update (C-FIND)

3.2.2.1 Associated Real-World Activity

The associated Real-World activity is a C-FIND request initiated by an internal daemon process. If the process successfully establishes an association to a remote Application Entity, it will transfer the worklist query items via the open association.

If the C-FIND Response from the remote Application contains a status other than "Pending", "Success" or "Warning", the association is aborted and a notification about communication problem to the RIS/HIS will be displayed on the UI. The next attempt to establish an association will then take place on user's request. From then on the time interval driven request mechanism is again activated.

3.2.2.2 Proposed Presentation Context (Presentation Context Table)

The DICOM Interface of the POLYTRON T.O.P. will propose the following presentation contexts:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model FIND	1.2.840.10008.5.1.4.31	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		DICOM Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

3.2.2.3 SOP Specific Conformance Statement

Please refer to Annex B for the description of the Siemens Worklist Request Identifier.

3.2.3 Association Acceptance Policy

not applicable

3.3 Communication Profiles

3.3.1 Supported Communication Stacks (part 8)

The DICOM Interface of the POLYTRON T.O.P. provides DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

3.3.2 TCP/IP Stack

The DICOM Interface of the POLYTRON T.O.P. uses the TCP/IP stack from the SUN-OS system upon which it executes. It uses a subroutine library, based on a Berkeley socket interface.

3.3.3 Physical Media Support

The DICOM Interface of the POLYTRON T.O.P. is indifferent to the physical medium over which TCP/IP executes. It inherits this from the SUN-OS UNIX System upon which it executes.

3.4 Extensions/Specializations/Privatizations

3.4.1 Standard Extended Basic Worklist Management

None

3.4.2 Private Transfer Syntaxes

None

3.5 Configuration

3.5.1 AE Title/Presentation Address Mapping

The Siemens POLYTRON T.O.P. DICOM unique Application Entity Titles are assigned using the following mechanism:

Each Application Entity Title starts with a unique string of 10 characters assigned for this Siemens POLYTRON T.O.P. DICOM node. This string is also used as the first 10 characters of the PACSnet Logical Address (PLA) and builds the AEroot. An example for such a string is '049SA1DS39'.
The DICOM Sender Application provides the Application Entity Title:

<AEroot>DBWM

The Application Entity Title, Host name and Port number are defined via the SIT service tool. The SIT service tool is intended to be used by a CSE only. Setting of one Default gateway is possible too.

3.5.2 Configurable Parameters

The Application Entity Titles, Host names and Port numbers are configured using the SIT.

Other default values used are described in 3.5.2.2 and 3.5.2.3.

3.5.2.1 Number of Simultaneous Associations

POLYTRON T.O.P. supports for one service only one association at a time.

3.5.2.2 Maximum PDU Size

- max PDU size: 16 kB

3.5.2.3 Time Out

- time-out until a SCP has to accept/reject an association request: 15 sec
- time-out for accepting a message over network: 15 sec

3.5.2.4 Query Attributes

Some Worklist Query Keys can be configured. Setting the parameter

"Use own AET for worklist match"

to **yes** will cause the attribute "Scheduled Station AE Title" to be filled. When set to **no**, this will cause the attribute "Modality" to be filled with XA instead.

3.6 Support of Extended Character Sets

ISO-IR 100 (ISO 8859-1:1987 Latin Alphabet N 1. supplementary set)

Annex A: Siemens DICOM SC Standard Extended IOD Description

Module	Attribute Name	TAG	Type	Comments
Patient	Patient's Name	0010,0010	2	From Worklist or user input
	Patient ID	0010,0020	2	From Worklist or user input
	Patient's Birth Date	0010,0030	2	From Worklist or user input
	Patient's Sex	0010,0040	2	From Worklist or user input
General Study	Study Instance UID	0020,000D	1	From Worklist or created by equipm.
	Study Date	0008,0020	2	
	Study Time	0008,0030	2	
	Referring Physician's Name	0008,0090	2	From Worklist, else Zero length
	Study ID	0020,0010	2	
	Accession Number	0008,0050	2	From Worklist or user input
Patient Study	Patient's Size	0010,1020	3	User input
	Patient's Weight	0010,1030	3	From Worklist or user input
General Series	Series Instance UID	0020,000E	1	
	Series Number	0020,0011	2	
	Series Date	0008,0021	3	
	Series Time	0008,0031	3	
	Performing Physician's Name	0008,1050	3	From Worklist or user input
	Body Part Examined	0018,0015	3	Zero length
	Request Attributes Sequence	0040,0275	3	only if Worklist Patient
	> Scheduled Procedure Step ID	0040,0009	1C	
	> Requested Procedure ID	0040,1001	1C	
General Equipment	Manufacturer	0008,0070	2	"SIEMENS "
	Institution Name	0008,0080	3	
	Station Name	0008,1010	3	<AE-root>
	Manufacturer's Model Name	0008,1090	3	"POLYTRON_TOP"
	Device Serial Number	0018,1000	3	
	Software Versions	0018,1020	3	
SC Equipment	Conversion Type	0008,0064	1	Defined Term "DI" is used
	Modality	0008,0060	3	"XA"
General Image	Image Date	0008,0023	2C	
	Image Time	0008,0033	2C	
	Image Number	0020,0013	2	
	Patient Orientation	0020,0020	2C	Zero length
	Acquisition Number	0020,0012	3	Same as 0020,0013
	Acquisition Date	0008,0022	3	
	Acquisition Time	0008,0032	3	
	Image Comments	0020,4000	3	<scene name>
Image Pixel	Samples per Pixel	0028,0002	1	Always "1"
	Photometric Interpretation	0028,0004	1	'MONOCHROME2"
	Rows	0028,0010	1	$1024_{(dec.)}$
	Columns	0028,0011	1	$1024_{(dec.)}$
	Bits Allocated	0028,0100	1	$16_{(dec.)}$
	Bits Stored	0028,0101	1	$10_{(dec.)}$
	High Bit	0028,0102	1	$9_{(dec.)}$
	Pixel Representation	0028,0103	1	0x0000
	Pixel Data	7FE0,0010	1	
Overlay Plane	Overlay Rows	6000,0010	1	$1024_{(dec.)}$
	Overlay Columns	6000,0011	1	$1024_{(dec.)}$
	Overlay Type	6000,0040	1	"G"
	Origin	6000,0050	1	1\1
	Overlay Bits Allocated	6000,0100	1	$16_{(dec.)}$
	Bit Position	6000,0102	1	$13_{(dec.)}$
Modality LUT	Rescale Intercept	0028,1052	1C	"0"
	Rescale Slope	0028,1053	1C	"01"
	Rescale Type	0028,1054	1C	"US"
VOI LUT	Window Center	0028,1050	3	"00512\000512"
	Window Width	0028,1051	1C	"1024\01024"
SOP Common	SOP Class UID	0008,0016	1	
	SOP Instance UID	0008,0018	1	
	Specific Character Set	0008,0005	1C	"ISO_IR 100"

Table A.1: Standard Secondary Capture Elements

Attribute Name	TAG	Type	Comments
DATA Set Type	0008,0040	RET	0
DATA Set Subtype	0008,0041	RET	Zero length
Image Position	0020,0035	RET	Zero length
Image Orientation	0020,0050	RET	Zero length
Masking Image	0020,0080	RET	Zero length
Acquisitions in Series	0020,1001	RET	
Modifying Device ID	0020,3401	RET	<AR-root>
Modified Image ID	0020,3402	RET	<AE-root><time-stamp>
Modified Image Date	0020,3403	RET	
Modifying Device Manufacturer	0020,3404	RET	“SIEMENS”
Modified Image Time	0020,3405	RET	
Modified Image Description	0020,3406	RET	Zero length
Image Location	0028,0200	RET	0x7FE0
Overlay Location	6000,0200	RET	0x7FE0

Table A.2: Supported retired elements

Module	Attribute	TAG	Type	Comments
Contrast/Bolus	Contrast Bolus Agent	0018,0010	2	Zero length
X-Ray Acquisition	KVP	0018,0060	2	
XA Positioner	Positioner Primary Angle	0018,1510	2	
XA Positioner	Positioner Secondary Angle	0018,1511	2	

Table A.3: Supported elements from XA IOD

Module	Attribute	Tag
Frame of Reference	Frame of Reference UID	0020,0052
Study Acquisition	Series in Study	0020,1000
Image Plane	Pixel Spacing	0028,0030
Imaging Service Request	Requesting Physician	0032,1032

Table A.4: Other Elements Supported

Annex B: Siemens Worklist Request Identifier Description

Module Name Attribute Name	Matching Key Type	Return Key Type	Tag	M	R	IOD	DICOM Part 3 Tables
SOP Common							C.12- 1
Specific Character Set	O	1C	0008,0005		x		
Scheduled Procedure Step							C.4-10
Scheduled Procedure Step Sequence	R	1	0040,0100		X		
> Scheduled Station AET	R	1	0040,0001	(S)			
> Scheduled Procedure Step Start Date	R	1	0040,0002	S			
> Scheduled Procedure Step Start Time	R	1	0040,0003		x		
> Modality	R	1	0008,0060	(S)	x		
> Scheduled Performing Physician's Name	R	2	0040,0006		x	x[1]	
> Scheduled Procedure Step Description	O	1C	0040,0007		x		
> Scheduled Station Name	O	2	0040,0010		x		
> Scheduled Procedure Step Location	O	2	0040,0011		x		
> Pre-Medication	O	2	0040,0012		x		
> Scheduled Procedure Step ID	O	1	0040,0009		x	x	
> Requested Contrast Agent	O	2C	0032,1070		x		
Requested Procedure							C.4-11
Requested Procedure ID	O	1	0040,1001		x	x	
Requested Procedure Description	O	1C	0032,1060		x		
Study Instance UID	O	1	0020,000D		x	x	
Requested Procedure Priority	O	2	0040,1003		x		
Patient Transport Arrangements	O	2	0040,1004		x		
Imaging Service Request							C.4-12
Accession Number	O	2	0008,0050		x	x	
Requesting Physician	O	2	0032,1032		x	x	
Referring Physician's Name	O	2	0008,0090		x	x	
Visit Identification							C.3-2
Admission ID	O	2	0038,0010		x		
Visit Status							C.3-3
Current Patient Location	O	2	0038,0300		x		
Visit Admission							C.3-4
Admitting Diagnosis Description	O	3	0008,1080		x		
Patient Identification							C.2-2
Patient Name	R	1	0010,0010		x	x	
Patient ID	R	1	0010,0020		x	x	
Patient Demographic							C.2-3
Patient's Birth Date	O	2	0010,0030		x	x	
Patient's Sex	O	2	0010,0040		x	x	
Patient's Weight	O	2	0010,1030		x	x	
Confidentiality constraint on patient data	O	2	0040,3001		x		
Patient Medical							C.2-4
Patient State	O	2	0038,0500		x		
Pregnancy Status	O	2	0010,21C0		x		
Medical Alerts	O	2	0010,2000		x		
Contrast Allergies	O	2	0010,2110		x		
Special Needs	O	2	0038,0050		x		

Table B.1: Worklist Request Identifier

The table should be read as follows:

- Attribute Name: Attributes supported to build a POLYTRON T.O.P. Worklist Request Identifier.
- Matching Key Type: Requested [R] or optional [O] Matching key. POLYTRON T.O.P. assumes that the Modality Worklist SCP supports Matching Keys as defined in DICOM PS 3.4 K 2.2, i.e. that the SCP is able to at least perform Single Value matching.
- Return Key Type: Mandatory, conditional and optional Return key.

- Tag: Appropriate DICOM tag for this attribute.
- M: Matching keys. A "S" will indicate that POLYTRON T.O.P. will supply an attribute value for Single Value Matching. It can be configured if “Scheduled Station AE Title” or “Modality” (XA) is supplied. The date is specified to meet Single Value Matching criteria. The "Scheduled Procedure Step Start Date" will be supplied in DICOM 3.0 format "yyyymmdd".
- R: Return keys. A "x" will indicate that POLYTRON T.O.P. will supply this attribute as Return Key with zero length for Universal Matching. The POLYTRON T.O.P. will support retired date format (yyyy.mm.dd) for "Patient’s Birth Date" and "Scheduled Procedure Step Start Date" in the response identifiers. For "Scheduled Procedure Step Start Time" also retired time format as well as unspecified time components are supported.
- IOD: An "x" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step. The "x^{1}" for "Scheduled Perf. Physician’s Name" indicates that the content is used to populate the "Performing Physician’s Name" field in the Patient registration dialog. In can be altered there before it is made permanent for inclusion into the IOD’s.